TASK ES-8-21 O249
TOOL LIST PROGRAM FEASIBILITY STUDY
FINAL REPORT

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THE NATIONAL SHIPBUILDING RESEARCH PROGRAM

Task ES-8-21
Tool List Program Feasibility Study
For Outside Machinery Operations

CONDUCTED AT:

Industrial Engineering Department
Ingalls Shipbuilding Division
Litton
P.O. Box]49
Pascagoula, Mississippi 39567

January 1985 through April 1985

FOR :

Bath Iron Works Corporation 700 Washington St. Bath, Maine 04530

The Society of Naval
Architects and Marine Engineers
Ship Production Committee
SP-8 Panel on Industrial Engineering

The U.S. Department of Transportation
Maritime Administration

THE NATIONAL SHIPBUILDING RESEARCH PROGRAM

FINAL REPORT FOR TASK ES-8-21

Tool List Program Feasibility Study For outside Machinery Operations



PREFACE

This final report was written to reveal the results of a fourteen (14) week feasibility study on a tool identification list program for outside machinery operations.

The scope of this project includes the complete development and evaluation of a tool identification list pilot program.

This project was performed as part of the National Shipbuilding Research Program, under subcontract to Bath Iron Works Corporation. Funding was provided jointly by the Maritime Administration (MarAd) and the U. S. shipbuilding industry. Administration of this project was through the Society of Naval Architects and Marine Engineers (SNAME) Sp-8 panel on Industrial Engineering. Performance of the project was by the Industrial Engineering Department of Ingalls Shipbuilding.

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INTRODUCTION

In December of 1983 Ingalls Shipbuilding assumed an active part in the Maritime Administration's National Shipbuilding Research Program. At that time the Industrial Engineering Department at Ingalls began to work on Task ES-8-21, the Data Development of Detail Standards for Outside Machinery Operations. The purpose of this project was twofold. It was primarily to provide the shipbuilding industry with a set of universal standards for Outside Machinery Operations. It was also to identify specific areas where methods improvements could be made to benefit both Ingalls and the U. S. Shipbuilding industry.

It was during the shipyard observations by methods analysts that the problem of excessive travel for tools by outside machinists became apparent. It was observed that some machinists were reporting to shipboard job sites without all of the required tools to perform the job. Numerous trips were made off the ship for additional tools. Further analysis revealed that the problem was costing Ingalls almost one million dollars annually in excessive labor costs. Communications with other shipyards through NSRP (The National Shipbuilding Research Program) Sp-8 Panel on Industrial Engineering revealed that the problem was industry wide.

Seeing that the problem was industry wide, Ingalls submitted a proposal to and received approval from the Sp-8 Panel to implement and evaluate a solution to this problem. The proposed solution was to provide machinists with tool lists that would enumerate all of the necessary equipment required to perform each job. The implementation of this solution was considered capable of reducing the numerous trips made off the ship for additional tools. The implementation of a pilot program utilizing and evaluating the effectiveness of this solution is the subject of this Tool List Program Feasibility Study.

PROGRAM BENEFITS

TOOL LIST PROGRAM ADVANTAGES

It is estimated that Ingalls Shipbuilding expends approximately \$900,000 annually in labor costs for excessive tool travel by outside machinists. The tool list program was designed as an instrument to aid in the reduction of excessive travel for tools by outside machinists. The tool list program alone will not totally eliminate excessive travel for tools. Tool lists will however do the following:

- o Provide a comprehensive list of tools required to perform specific tasks.
- o Provide the necessary information to reduce the amount of time an experienced machinist would have to spend planning a job.
- o Provide the necessary information to reduce excessive travel time incurred by inexperienced machinists.

In-yard studies revealed that Ingalls could annually reduce its excessive travel for tools labor costs by \$323,651 annually. This would involve using tool lists in CG 47 class cruisers and LHD assault ship new construction areas aboard ship for outside machinists.

TOOL LIST PROGRAM DISADVANTAGES

The major disadvantage of the tool list program is that it relies heavily upon the persistence of the outside machinery supervisor. The supervisor <u>must</u> continue to encourage and monitor the use of tool lists or the program will loose its potential.

The tool list program is not a cure-all for the excessive travel for tools problem. Below are some examples of situations for which the tool list concept is rather limited.

- Tool lists won't eliminate excessive travel for tools costs caused by employees trying to escape from work. Supervisors must monitor their employees work habits to do this. Tool lists can be used in cooperation with good supervision to eliminate excuses for leaving the ship to obtain tools.
- The tool list concept doesn't work very well with unplanned work. By the very nature of such work it is impossible to anticipate the scope, when it will.occur and what tools might be required.

TOOL LIST DISADVANTAGES (CONT.)

- The tool list concept doesn't work well with complex long term jobs. Tool lists that become multi-page in length tend to be easy to ignore in the long-run.
- The tool list concept is not conducive to assist type work. Where work descriptions are vague and task requirements are subject to change from ship to ship, it is questionable whether a tool list would significantly reduce excessive travel time.

Even though there are areas where the tool list concept is limited in the shipbuilding environment, the advantages outweigh the disadvantages.

TOOL LIST PROGRAM PAYPACK ANALYSIS

The tool list program does produce savings if properly utilized. However, there are administrative costs associated with the implementation and continued operation of this program. The administrative costs must be considered in a payback analysis to determine the economical feasibility of such a program.

The administrative costs are shown in figure 1. Also shown in figure 1 are the departments involved and the scope of their activities as it relates to the tool list program.

Figure 2 shows the payback analysis. The continuing annual operation cost is subtracted from the gross annual savings to yield a net annual savings. The implementation administrative cost is considered as an investment cost. The payback period is calculated by dividing the investment by the net annual savings.

Based on the information in figure 2 it is economically advantageous for Ingalls to implement the tool list program for the Outside Machinery Department.

FIGURE 1 - TOOL LIST PROGRAM

ADMINISTRATIVE COST

ADMINISTRATIVE IMPLEMENTATION COST

\$85,920

COMPUTER SERVICES (Computor Usage)

1,035

INDUSTRIAL ENGINEERING (Coordination and Tool List Dovelopment) 76,125

OUTSIDE MACHINERY (Rovlow Tool List Devolopment)

8,760

ANNUAL ADMINISTRATIVE OPERATING COST

\$10,059

COMPUTER SERVICES (Computor Usage)

1,421

OUTSIDE MACHINERY (Changes and Now Equipment)

876

PRODUCTION PLANNING (Tool List added to BOM)

7,697

REPROGRAPHIC SERVICES (Additional Paper Generated)

FIGURE 2

TOOL LIST PROGRAM PAYBACK ANALYSIS

Gross Annual Savings \$323,651

•

Less Annual Administrative Operating Cost -10,059

Net Annual .Savlngs 313,592

•

INVESTMENT (Administrative Implementation Cost)

\$85,920

PAYBACK PERIOD

0.27 YEARS

TOOL LIST PROGRAM DESCRIPTION

This Tool List Program was designed to provide the maximum amount of information to the craftsman with the intention of holding the administrative cost of the program to a minimum. The program described in this section was developed by the Ingalls Industrial Engineering Department with the cooperation of the Production Planning Department. The highlight of this program is that the tool list is printed on the bill of material. Use of this system provides a complete summary of both tools and materials required to complete a given job.

TOOL LIST PROGRAM NETWORK

The mechanics of this program directly involved three departments, Industrial Engineering, Production Planning and Outside Machinery (see figure 3). First, Industrial Engineering with the cooperation of Outside Machinery Supervision develops the tool lists (see figure 4). The Industrial Engineering Department then stores the tool lists into the TIDB (Technical Information Data Base) Text System. Industrial Engineering also develops an Account and Item to Tool List Code Number Matrix to. identify the location of each tool list in the TIDB System (see figure 5). The Planner then is familiarized with the Matrix and matches each major piece of equipment on a bill of material to a tool list code number. The tool list code numbers, bill of material number and hull number are typed into the TIDB System by the planner. Utilization of this system produces tool lists that are part of the computer generated bill of material (see figure 6). Now the machinists can gather all of the necessary tools and materials to complete a job by referring to one document.

TIDB TEXT SYSTEM

The TIDB Text (Technical Information Data Base) System is a program written by Ingalls Computer Services Department for the express purpose of adding notes to the bill of material to provide the craft supervisors and workers with information that would assist them in ship construction. During the tool list pilot program. forty-seven (47) tool lists were added to seven hundred seven (707) bill of materials.

Figure 7 shows the five (5) available options of the Text System. Option Number . 1 allows tool list data to be input, changed or removed from the computer, thus, the actions create/modify/delete. The tool list data was input into the computer under a dummy bill of material (No. 0000-000-1) and a dummy hull (No. 4500). The second option, Detail Text View, allows one to view the data that has-been created, modified or deleted in option number 1. Option Number 3, Merge paragraph from existing bill, allows the tool list stored on the dummy bill of material to be transferred to the large number of bill of materials that the tool list is applicable to. Option No. 4, Bill Paragraph List, displays the paragraph numbers (tool list code numbers) on any given bill of material. Option X allows one to end the session of interaction on the program.

FIGURE 3 - TOOL LIST PROGRAM NETWORK DIAGRAM

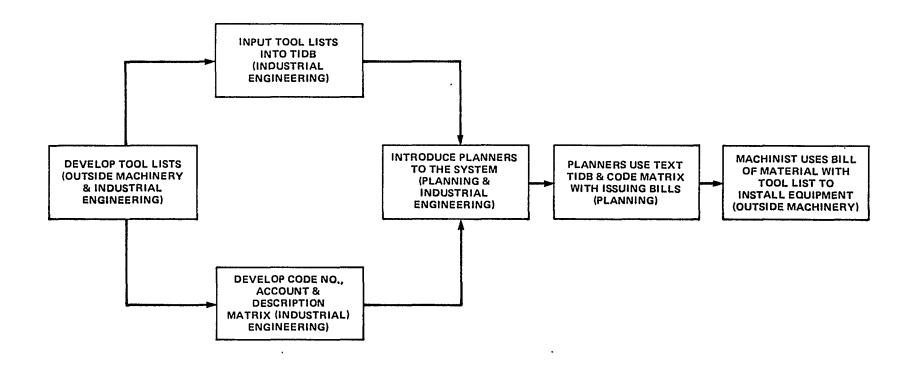


FIGURE 4 - SAMPLE TOOL LIST

BOAT HANDLING WINCH INSTALLATION MACHINIST TOOLS REQUIRED

- 1. 6 IN. STEEL SCALE (RIGID)
- 2. DRILL BITS (17/32 IN. & 25/32 IN.)
- 3. HAMMER
- 4. CENTER PUNCH
- 5. PORTABLE MAGNETIC BASE DRILL
- 6. SCRIBER
- 7. FILE (FOR FILING CHOCKS)
- 8. C-CLAMP
- 9. RATCHET (1/2 IN. DRIVE)
- 10. SOCKET (1-1/4 IN.)
- 11. FIXED END WRENCH (1-1/4 IN.)
- 12. REAMERS (VARIOUS SIZES 3/4 IN. TO 1 IN.)
- 13. FEELER GAGE
- 14. LEVEL

FIGURE 5 - SAMPLE ACCOUNT AND ITEM TO TOOL LIST CODE NO. MATRIX

ACCOUNT NO.	ITEM DESCRIPTION	TOOL LIST CODE NO.
2501	BELLMOUTH	0100
2501	COOLING COIL	0101
2501	PRECIPITATOR	0102
2501	FAN COIL ASSEMBLY	0103
2501	FAN COIL UNIT	0104
2501	POWER PACK	0106
2501	TOXIC GAS DAMPER	0107

FIGURE 6 - PRINTED TOOL LIST ON A BILL OF MATERIAL FORM

HULL: 4504 DESC: VEHT EQUIPT 400 HZ CONV RH.HOO-3
DISTR: N KITTING REPORT BILL PAGE NO: 1
CHG: 800 LEAD DP: 24 ASSIST DP: 77 CHANGE REASON:

PEPORT NO.: X03352-P1

RPT PAGE NO: 609

MORK STA NO: 530 BILL REV:

DATE: 03/28/85 02:40 BILL: 2501-205-1 HULL: 45
BEPT: P P & S REGO-DT: 111964 DISTR: N

SCHED ISS: 102284 ACT ISS: 101084 LATEST CHG: 000 ******************** PLAIRIER: DATE: _/_/_ S COMPLETE: Y N S PARA ------ TEXT ------> > > 0104 OUTSIDE MACHINERY VENTILATION EQUIPMENT TOOL LISTING FAN COIL UNIT * DESCRIPTION: * SPECIFICATIONS: MODEL H1-H8 & V7
HEIGHT 265-805 LBS.
FON BOLT SIZE 5/8 IN. * (A) TOOLS REQUIRED FOR INSTALLATION MEN LINERS AREN'T * NECESSARY INCLUDE: BALL PEIN HAMMER
CENTER PUNCH
SCRIBER
6" STEEL TAPE
6" STEEL SCALE
MOLYCOTE COMPOUND
C-CLAMP
DPORTABLE DRILL MOTOR
RATCHETI 1/2 IN. DRIVE)
6" STEEL SCALE
MOLYCOTE COMPOUND
COMBINATION MERCH(15/16 IN.)
POF-MANIFACTURED TEMPLATE PRE-HAMMFACTURED TEMPLATE CUTTING FLUID . (8) TOOLS REQUIRED FOR INSTALLATION WHEN LINERS ARE HECESSARY INCLUDE ALL ITEMS LISTED UNDER (A) FILE FEELER GAGE

BILL REV: INGALLS SHIPDUILDING HATL CODE: CONTROL OF THE PASS REGOUDT: 11964 DISTR: N KITTING REPORT BILL PAGE NO: 2 SCHED ISS: 102264 ACT ISS: 101084 LATEST CHG: 000 LEAD DP: 24 ASSIST DP: 77 CHANGE REASON: REPORT NO.: X83352-R1 RPT PAGE NO: T PAGE NO: 610 HORK STA NO: 530 DHG/FH BLID COMP DRY BRY DP - GTY UM ECD - LOCATION IPS-GY OTC-DT OTC-GY STATUS A SCREM HEX HEAD CAP YLD185152 5/8-11 X 1-1/2 LG 0100 C5 /ELECTRO ZINC PLD CHROMATED G002 A 000 24 3. -393. - 4- Q F23-805169 B SCREH 101664 8 NUT HEX SELF-LOCKING VLD105152 5/8-11 MS17829-10C 0101 \$TL /ALY HIGH TENSILE CO PLO G002 000 24 3. -393. - 4- Q F36-266233 101684 1 EA A1-02537-01 04000 4120-0A0-642780A1 8 FAN COIL WHIT SIZE V-7 W/HTR 9.0 KM VL0512012 G002 G002 000 24 3. -393. - 4- Q 101684 0003

END OF BILL

FIGURE 7 - TIDB TEXT SYSTEM OPTIONS

=

PROJECT ACTIVITIES

The performance of this project was divided into five major activities. These activities were; Develop Plan of Attack, Set-Up Tool List Matrices, Develop Tool Lists, Add Tool Lists to Bill of Material, Evaluate Benefits of Tool List Usage.

DEVELOP PLAN OF ATTACK

The first activity performed was the development of a detailed plan of attack. This document listed all of the necessary detailed tasks to be completed. The tasks were time phased over the fourteen (14) week span of the project in a manner which would facilitate a steady, even-flow of work throughout the contract. Completion of these tasks were necessary for the successful completion of the entire project.

SET-UP TOOL LIST MATRICES

The next major step in completing this project was to choose various systems throughout the ship whose equipment would have a high probability of being installed during the time span of the project. This was done so that shipyard observations could be made to evaluate the tool list concept effectiveness. The systems chosen with this purpose in mind were ventilation, main high pressure air system, and the main lubrication oil system. After this step, each major equipment item in each system was identified by account and matched to a four digit tool list code (paragraph no.). The result is a document that can be used by the planner to relate the tool list code to the proper bill of material.

DEVELOP TOOL LISTS

Industrial Engineering's original proposed involvement in the development of tool lists was to be limited to directing craft supervisors as to which tool lists to develop and to follow-up on their progress. Insteads the Industrial Engineering coordinator reviewed the related drawings and developed the majority of the tool lists. The tool lists were then reviewed with the craft supervisors for approval. A total of forty-seven (47) tool lists were developed during this pilot program, using information from the Ticonderoga (CG 47) Class cruisers under construction at Ingalls Shipbuilding. The tool lists take into consideration the variations in size and manufacturing methods by having a separate section on each tool list to handle each peculiarity.

DEVELOP TOOL LISTS (CONT.)

The average time required to develop the forty-seven (47) tool lists during this project was 3 hours. This included time to request and review the required drawings, time to determine the type and size tools required (example: for a ½ in. bolt, determine that the drill size is 17/32 in., socket size is 3/4 in. and the ratchet required would be 1/2 in. drive). It also includes time to review the developed tool list with the craft and input the tool list into the computer system. Care must be exercised in using this estimated time of 3 hours as time to develop a tool can vary greatly. Depending upon the type of tool list developed the time can range from one-half (1/2) to twelve (12) hours for a single tool list. There are `two types of tool lists, a general tool list and a specific tool list. A tool list for an item incorporates many variations. For example, on a CG 47 Class cruiser there are over one-hundred (100) vaneaxial fans. Therefore, to develop a tool list for a vaneaxial fan over one-hundred drawings have to be requested and reviewed noting the tooling difference of the different sizes. Then, the different sizes have to be classed by similar tooling requirements (see page 28). Therefore, a general tool list requires a large amount of time to develop. A specific tool list for an item doesn't have to incorporate any variations because all of the units are identical as far as their tooling requirements are concerned. An example of this is a fan coil unit (see page 23). Even though this item may vary in wieght from two hundred sixty-five (265) to eight hundred five (805) pounds the tooling requirements are identical. Therefore, to develop a tool list for a fan coil unit only one fan coil unit drawing is reviewed and the tooling requirements will apply to all variations in size

ADD TOOL LISTS TO BILL OF MATERIAL

After tool lists were developed, they were input into the TIDB Text "dummy" bill of material created by Industrial Engineering for storage purposes. Then, the Industrial Engineering coordinator reviewed the bill of materials and added the proper tool lists from the dummy bill of material (0000-000-j) to each active bill of material (for example: 2502-302-3). This was done with the TIDB Text System using the merge (No. 3) command (see TIDB Text System section).

EVALUATE BENEFITS OF TOOL LIST USAGE

The final phase of this pilot program was an evaluation of the effectiveness of the tool list concept. In-yard studies were performed with machinists who had tool lists. Supervisors made the machinists aware of the proper use of the tool lists and Industrial Engineering observed the machinists activities. Cost savings data was generated from these observations.

Another part of the <u>evaluate benefits</u> phase, was the development of the administrative cost and determining if the program was economically feasible.

The purpose of this section of the report is to expound upon the benefits Ingalls Shipbuilding received from this pilot program. It also reveals the requirements for Ingalls to fully implement this program and to fully reallize all of the potential savings.

Below are the original pilot program tasks.

- 1. Industrial Engineering and Outside Machinery Departments were to work together to develop as many of the five hundred (500) CG 47 class cruiser related tool lists as possible during the time frame available.
- 2. Industrial Engineering was to input the tool lists into the TIDB Text System.
- 3. Industrial Engineering was to develop tool list code number, account and description matrices.
- 4. Production Planning was to use the code number, account and description matrices to match each major piece of equipment on a bill of material to the appropriate tool list code number.
- 5. Industrial Engineering was to publish a final report revealing the effectiveness, administrative cost and economic feasibility of a tool list program.

Status of tasks at end of pilot program.

- 1. A total of forty-seven (47) tool lists were developed.
- 2. Industrial Engineering input forty-seven (47) tool lists into the TIDB Text System.
- 3. Industrial Engineering coordinator developed code number, account and description matrices for forty-seven (47) tool lists.
- 4. Industrial Engineering added the tool lists to seven hundred seven (707) bill of materials on CG 53 through CG 57, CG 59, and CG 62.
- 5. Industrial Engineering conducted in-yard studies and determined that tool lists were being used by outside machinists. In every case studied, where tool lists were provided, excessive job preparation was eliminated.

TOOL LIST PILOT PROGRAM EVALUATION (CONT.)

The total excessive job preparation problem at Ingalls represents \$898,527 annually in labor costs. The effect of tool lists on the total excessive job preparation problem was determined by the following actions:

- o Re-evaluating the initial studies and identifying those instances where only direct supervision control could have eliminated excessive job preparation.
- o Identifying those jobs which the tool list concept would be ineffective (example: unplanned work).
- O Performing in-yard studies to determine how often the tool list is used by the machinist.

The re-evaluation of the initial studies revealed that \$252,517 annually could be controlled directly by supervisors. The identification of those jobs where the tool list concept is ineffective represented \$322,359 annually. Performance of in-yard studies revealed that in every case where tool lists were provided, excessive job preparation was eliminated. Taking these factors into account, the effect of a fully implemented tool list program at Ingalls would annually save \$323,651. The forty-seven (47) tool lists developed during this pilot program represents fourteen and seven-tenths percent (14.7%) of the work effort where tool lists can be used. When this percentage is applied to the annual savings of a fully implemented program it yields a savings of \$47,577 annually. This savings was incurred as a direct result of this pilot program (see figure 8). To obtain additional savings from this tool list program, additional tool lists would have to be developed and added to bill of materials. The time frame required to complete the implementation phase of such a project would be one year.

FIGURE 8- TOOL LIST PROGRAM ANNUAL COST SAVINGS

ANNUAL. EXCESSIVE JOB PREPARATION COST

\$898,527

LESS SUPERVISION RELATED COST

-252,517

• REPORTING TO JOB SITE WITHOUT ANY TOOLS . RETURNING TOOLS UNNECESSARILY BEFORE SHIFT ENDS

LESS UNCONTROLLABLE COST

-322,359

- . UNPLANNED WORK . ASSIST WORK . COMPLEX, LONG DURATION TASKS

TOTAL SAVINGS OF A FULLY IMPLEMENTED TOOL LIST PROGRAM AT INGALLS

323,651

TOTAL SAVINGS INCURRED-AS A DIRECT RESULT OF THIS PILOT PROGRAM"

47,577

TOOL LIST SUMMARY

VENTILATION SYSTEM EQUIPMENT	TOOL LIST CODE	PAGE
BELLMOUTH FAN INTAKE	0100	19
COOLING COIL	0101	20
	0102	21
ELECTROSTATIC PRECIPITATOR	0103	22
FAN COIL ASSEMBLY FAN COIL UNIT	0104	23
GRAVITY COIL	0105	24
	0106	25
POWER PACK	0107	26
TOXIC GAS DAMPER TUBEAXIAL FAN	0108	27
VANEAXIAL FAN	0109	28
	0110	29
VENTILATION HEATER		
MAIN HIGH PRESSURE AIR SYSTEM EQUIPMENT		
AIR FLASK - 0.5 CU. FT.	0120	30
AIR FLASK - 1.5 CU- FT.	0121	31
AIR FLASK - 6.0 CU. FT.	0122	32
AIR FLASK - 8.0 CU. FT.	0123	33
BLIND FLANGE - 8 IN. IPS	0124	35
HOSE REEL	0125	36
RELAY TANK	0126	37
AIR DRYER	0127	38
MAIN OIL LUDDICATION OVEREM FOUITDMENT		
MAIN OIL LUBRICATION SYSTEM EQUIPMENT	0130	39
ELECTRIC-WATER HEATER	0131	40
LUBE OIL COOLER	0132	41
LUBE OIL FILTER	0133	42
LUBE OIL PURIFIER	0134	43
LUBE OIL PURIFIER HEATER	0135	44
LUBE OIL PURIFIER STRAINER	0135	45
LUBE OIL SERVICE PUMP		46
LUBE OIL STORAGE AND COND. ASSEMBLY	0137	40

TOOL LIST SUMMARY (CONT.)

MISCELLANEOUS EQUIPMENT	TOOL LIST CODE	PAGE
AIR CONDITIONING PLANT	9200	47
ELECTRICAL ENCLOSURE	9201	48
SHIP'S SERVICE EMERGENCY GENERATOR	9202	49
FIVE INCH GUN MOUNT MACHINING	9203	50
STERN TUBE AND STRUT BORING	9204	51
MAIN ENGINE PAD MACHINING	9205	52
WASTE HEAT BOILER	9206	53
CHILL WATER PUMP	.9207	54
BOAT HANDLING WINCH	9208	55
SEWAGE PUMP	9209	56
BRIDGE CRANE AND RAILS	9210	57
CONVECTION OVEN	9211	58
HOIST AND MONORAIL	9212	59
BORING RUDDER CASTINGS	9213	60
CAPSTAN	9214	61
OPERATING GEAR INSTALLATION	9215	62
HYDRAULIC OIL POWER MODULE	9216	63
FEED PUMP	9217	64
AEGIS WATER COOLER	9218	65
ISOLATOR FOR 400 HERTZ CONVERTER	9219	66

BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB DATE: 04/11/85 REPORT NO: X82890-R1 DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: PAGE NO: SCHED ISS: ACT ISS: LATEST CHG: LEAD DP: ASSIST DP: WORK STA NO: ################################ PLANNER: DATE: __/_/_ # COMPLETE: Y N ********************** PARA 0100 OUTSIDE MACHINERY **VENTILATION EQUIPMENT** TOOL LISTING DESCRIPTION: BELLMOUTH FAN INTAKE SPECIFICATIONS: FON BOLT SIZE 1/2 IN. (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE: * RATCHET(1/2 IN. DRIVE) * EXTENSION(1/2 IN. DRIVE) * SOCKET(3/4 IN.) * COMBINATION WRENCH 3/4 IN.) * MOLYCOTE OR C5A COMPOUND * UTILITY KNIFE

INGALLS SHIPBUILDING DIVISION DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB REPORT NO: X82890-R1 DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: PAGE NO: SCHED ISS: ACT ISS: LATEST CHG: LEAD DP: ASSIST DP: WORK STA NO: 0101 **OUTSIDE MACHINERY VENTILATION EQUIPMENT** TOOL LISTING DESCRIPTION: COOLING COILS-50 SERIES, CLASS DW SPECIFICATIONS: TYPE 51-56 DW 57-58 DW * WEIGHT(LBS) 145-636 1000-1310 * 3/4 IN. FDN BOLT SIZE 5/8 & 1 IN.* LIST ID (A) (B) & (C) * (A) TOOLS REQUIRED FOR INSTALLATION OF 51-56 DW COOLING COILS INCLUDE: BALL PEIN HAMMER DRILL BITS(17/64,25/32 IN.) CENTER PUNCH PORTABLE DRILL MOTOR SCRIBER RATCHET(1/2 IN. DRIVE) . 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE) 6" STEEL SCALE SOCKET(1-1/8 IN.) TEMPLATE MATERIAL COMB. WRENCH(1-1/8 & 1-1/16 IN.) UTILITY KNIFE MOLYCOTE OR C5A COMPOUND CUTTING FLUID (B) TOOLS REQUIRED FOR INSTALLATION OF 57-58 DW COOLING COILS WITHOUT LINERS INCLUDE: ALL ITEMS LISTED UNDER (A). NOTE: WRENCH, SOCKET, EXTENSION, RATCHET, AND DRILL BIT SIZES ARE DIFFERENT. * DRILL BITS(17/64,21/32, & 1-1/16 IN.) SOCKETS(15/16 & 1-1/2 IN.) RATCHET(1/2 & 1 IN. DRIVE) EXTENSION(1/2 & 1 IN. DRIVE)

> (C) TOOLS REQUIRED FOR INSTALLATION OF 57-58 DW COOLING COILS WITH LINERS INCLUDE:

ALL ITEMS LISTED UNDER (B) FILE

FEELER GAGE

BÍLL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB DATE: 04/11/85 DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: DEPT: ENGINEERING ASSIST DP: LEAD DP: LATEST CHG: SCHED ISS: ACT ISS: 0102 OUTSIDE MACHINERY VENTILATION EQUIPMENT TOOL LISTING ELECTROSTATIC PRECIPITATOR DESCRIPTION: SPECIFICATIONS: SIZE 16 WEIGHT 610 LBS. FDN BOLT SIZE 3/4 IN. (A) TOOLS REQUIRED FOR INSTALLLATION INCLUDE: DRILL BITS(25/32 IN.) * BALL PEIN HAMMER * CENTER FUNCH PORTABLE DRILL MOTOR RATCHET(1/2 IN. DRIVE) * SCRIBER EXTENSION(1/2 IN. DRIVE) * 8' STEEL TAPE SOCKET(1-1/8 IN.) * 6" STEEL SCALE COMBINATION WRENCH(1-1/16 &1-1/8 IN.) * FILE HOLYCOTE OR C5A COMPOUND * FEELER GAGE CUTTING FLUID

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``	. 0103	**************************************
)		* * DESCRIPTION: FAN COIL ASSEMBLY * *
)	; ;	* SPECIFICATIONS: SIZE 21-25 TONS * * WEIGHT 1381-1823 LBS. * * FDN BOLT SIZE 1 IN. * * *
)		* (A) TOOLS REQUIRED FOR INSTALLATION WHEN LINERS AREN'T * * NECESSARY INCLUDE: * *
)		* BALL PEIN HAMMER DRILL BITS(1-1/16,25/32,17/64 IN.)* * CENTER PUNCH PORTABLE DRILL MOTOR * * SCRIBER RATCHET(1/2 IN. DRIVE) * * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE) * * 6" STEEL SCALE SOCKET(1/2 IN.) *
)		* MOLYCOTE COMPOUND COMBINATION WRENCH(1/2 IN.) * * CUTTING FLUID PRE-MANUFACTURED TEMPLATE * *
)		* * * * * * * * * * * * * * * * * * *
)		* ALL ITEMS LISTED UNDER(A) * * FILE * * FEELER GAGE * *
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DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: SCHED ISS: ACT ISS: LATEST CHG: LEAD DP: ASSIST DP: 0104 **OUTSIDE MACHINERY** VENTILATION EQUIPMENT TOOL LISTING DESCRIPTION: FAN COIL UNIT H1-H8 & V7 SPECIFICATIONS: MODEL WEIGHT 265-805 LBS. FDN BOLT SIZE 5/8 IN. (A) TOOLS REQUIRED FOR INSTALLATION WHEN LINERS AREN'T NECESSARY INCLUDE: BALL PEIN HAMMER DRILL BITS(21/32 IN.) CENTER PUNCH PORTABLE DRILL MOTOR SCRIBER RATCHET(1/2 IN. DRIVE) 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE) 6" STEEL SCALE SOCKET(15/16 IN.) MOLYCOTE COMPOUND COMBINATION WRENCH(15/16 IN.) C-CLAMP PRE-MANUFACTURED TEMPLATE CUTTING FLUID (B) TOOLS REQUIRED FOR INSTALLATION WHEN LINERS ARE NECESSARY INCLUDE ALL ITEMS LISTED UNDER (A) FILE FEELER GAGE

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ASSIST DP:

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0105

OUTSIDE MACHINERY VENTILATION EQUIPMENT

TOOL LISTING

DESCRIPTION: GRAVITY COILS

SPECIFICATIONS: SIZE 1,3, 4 5G WEIGHT 125-197 LBS FON BOLT SIZE 1/2 IN.

(A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BITS(17/32 IN.) * CENTER PUNCH PORTABLE DRILL MOTOR * SCRIBER RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE)

* 6" STEEL SCALE SOCKET(3/4 IN.)

* MOLYCOTE COMPOUND COMBINATION WRENCH(3/4 IN.)

* CUTTING FLUID

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DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: 7 PAGE NO: 15

SCHED ISS: ACT ISS: LATEST CHG: LEAD DP: ASSIST DP: WORK STA NO:

0106

OUTSIDE MACHINERY VENTILATION EQUIPMENT

TOOL LISTING

* DESCRIPTION: POWER PACK

SPECIFICATIONS: TYPE MODEL 432100

WEIGHT 117 LBS FDN BOLT SIZE 3/8 IN

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BITS(13/32 IN.)

* CENTER PUNCH PORTABLE DRILL MOTOR

* SCRIBER RATCHET(1/2 IN. DRIVE)

* 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE)

* 6" STEEL SCALE SOCKET(9/16 IN.)

* MARKER COMBINATION WRENCH(9/16 IN.)

* MOLYCOTE COMPOUND CUTTING FLUID

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BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON COB

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KITTING REPORT TEXT FLY-SHEET

BILL PAGE NO:

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SCHED ISS:

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LATEST CHG:

LEAD DP:

ASSIST DP:

WORK STA NO:

0107

OUTSIDE MACHINERY

VENTILATION EQUIPMENT

TOOL LISTING

DESCRIPTION: TOXIC GAS DAMPER

SPECIFICATIONS: MODEL MODIFIED 2341 MARINE DAMPER*

WEIGHT 104-113 LBS. FDN BOLT SIZE 3/8,5/8, & 1/2 IN.

(A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BITS(21/32,13/32, & 17/32 IN.)

* CENTER PUNCH PORTABLE DRILL MOTOR * SCRIBER RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE)

* 6" STEEL SCALE SOCKET(9/16,15/16, & 3/4 IN.) * MARKER

COMBINATION WRENCH(9/16,15/16,3/4 IN.)* * CUTTING FLUID

MOLYCOTE OR C5A COMPOUND

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB REPORT NO: X82890-RI DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: PAGE NO: 17 SCHED ISS: ACT ISS: LATEST CHG: LEAD DP: ASSIST DP: WORK STA NO: 0108 OUTSIDE MACHINERY VENTILATION EQUIPMENT TOOL LISTING

> DESCRIPTION: TUBEAXIAL FAN

SPECIFICATIONS: FON BOLT SIZE 3/8 IN.

(A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BITS(7/16 IN.) * CENTER PUNCH PORTABLE DRILL MOTOR * SCRIBER RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE) * 6" STEEL SCALE SOCKET(9/16 IN.) * MOLYCOTE COMPOUND COMBINATION WRENCH(9/16 IN.)

* CUTTING FLUID

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INGALLS SHIPBUILDING DIVISION BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB

DATE: 04/11/85

REPORT NO: X82890-R1 DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: 10 PAGE NO: SCHED ISS: ACT ISS: LATEST CHG: LEAD DP: ASSIST OP: WORK STA NO: 0109 **OUTSIDE MACHINERY** VENTILATION EQUIPMENT TOOL LISTING DESCRIPTION: VANEAXIAL FAN SPECIFICATIONS: SIZE A1/4A - A2A A2-1/2A - A7A WEIGHT(LBS) 65 - 180220 - 530 600 - 1100 * FON BOLT SIZE 5/16,3/8, 1/2,5/8 1/2,5/8 * (IN) 9/16,1/2,5/8 3/4 LIST ID (A) (B) (C) (A) TOOLS REQUIRED FOR INSTALLATION OF A SIZE A1/4A THRU A2A FAN INCLUDE: PAINT BRUSH FEELER GAGE FILE RATCHET(1/2 IN. DRIVE) MOLYCOTE COMPOUND EXTENSION(1/2 IN DRIVE) COMB. WRENCH SOCKET(1/2,9/16,3/4,13/16,15/16 IN)* (1/2,9/16,3/4, RESILIENT MOUNT PRESERVATIVE(SPRAY-* 13/16,15/16 IN.) LAC) HAMMER STENCIL(1/4 OR 1/8 IN.) (B) TOOLS REQUIRED FOR INSTALLATION OF SIZE A2-1/2A THRU : A7A FANS INCLUDES: ALL ITEMS LISTED UNDER (A). SOCKETS AND COMBINATION WRENCH SIZES ARE DIFFERENT. SOCKETS(3/4, 15/16 IN.) COMBINATION WRENCH(3/4, 15/16 IN.) (C) TOOLS REQUIRED FOR INSTALLATION OF SIZE A8A THRU A16A* FANS INCLUDES: ALL ITEMS LISTED UNDER (A). SOCKET AND COMBINATION WRENCH SIZES ARE DIFFERENT. SOCKETS(3/4,15/16,1-1/8 IN.) COMBINATION WRENCH(3/4,15/16,1-1/16, 1-1/8 IN.) *************************

INGALLS SHIPBUILDING DIVISION DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: 11 SCHED ISS: ACT ISS: LATEST CHG: LEAD DP: ASSIST DP: 0110 ************************ OUTSIDE MACHINERY VENTILATION EQUIPMENT TOOL LISTING DESCRIPTION: **VENTILATION HEATER** SPECIFICATIONS: SIZE 33 - 36H WEIGHT 133 - 171 LBS FDN BOLT SIZE 1/2 IN (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE: * BALL PEIN HAMMER DRILL BITS(17/32 IN.) * CENTER PUNCH PORTABLE DRILL MOTOR * SCRIBER RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE) * 6" STEEL SCALE SOCKET(3/4 IN.) * MARKER COMBINATION WRENCH(3/4 IN.) * UTILITY KNIFE MOLYCOTE OR C5A COMPOUND * TEMPLATE MATERIAL CUTTING FLUID

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> 0120

OUTSIDE MACHINERY MAIN HIGH PRESSURE AIR SYSTEM EQUIPMENT

TOOL LISTING

* DESCRIPTION: AIR FLASK - 0.5 CU. FT.

* SPECIFICATIONS: CAPACITY 0.5 CU. FT. WEIGHT 140 -175 LBS.

FON BOLT SIZE 1/2 IN.

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BITS(17/32 IN.) * CENTER PUNCH PORTABLE DRILL MOTOR * SCRIBER RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE)

* 6" STEEL SCALE SOCKET(3/4 IN.)

* FILE COMBINATION WRENCH(3/4 IN.) * FEELER GAGE C-CLAMP

* MARKER MOLYCOTE OR C5A COMPOUND

* CUTTING FLUID

BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB REPORT NO: X82890-R1 DATE: 04/11/85 KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: 13 PAGE NO: DISTR: M 21 DEPT: ENGINEERING ACT ISS: LATEST CHG: LEAD DP: ASSIST DP: WORK STA NO: SCHED ISS:

0121 OUTSIDE MACHINERY MAIN HIGH PRESSURE AIR SYSTEM EQUIPMENT TOOL LISTING * DESCRIPTION: AIR FLASK - 1.5 CU. FT. CAPACITY 1.5 CU. FT. SPECIFICATIONS: WEIGHT 335 LBS. FDN BOLT SIZE 5/8 IN. * (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE: DRILL BITS(21/32 IN.) * BALL PEIN HAMMER * CENTER FUNCH PORTABLE DRILL MOTOR * SCRIBER RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE) * 6" STEEL SCALE SOCKET(15/16 IN.) * FILE COMBINATION WRENCH(15/16 IN.) * FEELER GAGE C-CLAMP MOLYCOTE OR C5A COMPOUND * MARKER * CUTTING FLUID

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0122

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB REPORT NO: X82890-R1
DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: 14 PAGE NO: 22
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OUTSIDE MACHINERY MAIN HIGH PRESSURE AIR SYSTEM EQUIPMENT TOOL LISTING DESCRIPTION: AIR FLASK - 6.0 CU. FT. SPECIFICATIONS: DRAWING NO. APPLICABILITY(VLD SERIES) 185366 185117 185649 CAPACITY(CU. FT.) 6.0 6.0 6.0 WEIGHT(LBS.) 680 720 615 FON BOLT SIZE(IN.) 1-1/8 3/4 5/8 LIST ID (A) (B) (C) (A) TOOLS REQUIRED FOR INSTALLATION OF A 6.0 CU. FT. AIR FLASK ON DRAWING VLD185366 INCLUDES: BALL PEIN HAMMER DRILL BITS(17/64,25/32,1-3/16 IN.)* CENTER PUNCH PORTABLE DRILL MOTOR SCRIBER RATCHET(1/2 IN. DRIVE) 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE) 6" STEEL SCALE SOCKET(1-11/16 IN.) FILE COMBINATION WRENCH(1-11/16 IN.) FEELER GAGE C-CLAMP MARKER MOLYCOTE OR C5A COMPOUND CUTTING FLUID (B) TOOLS REQUIRED FOR INSTALLATION OF A 6.0 CU. FT. AIR FLASK ON DRAWING VLD185117 INCLUDES: ALL ITEMS LISTED IN (A). SOCKET, DRIL BIT, AND COMB-INATION WRENCH SIZES DIFFER. SOCKET(1-1/8 IN.) DRILL BITS(17/64, & 25/32 IN.) COMBINATION WRENCH(1-1/8 & 1-1/16 IN.) (C) TOOLS REQUIRED FOR INSTALLATION OF A 6.0 CU. FT. AIR * FLASK ON DRAWING VLD185649 INCLUDES: ALL ITEMS LISTED IN (A). SOCKET, DRILL BIT, AND COMB-X INATION WRENCH SIZES DIFFER. SOCKET(15/16 IN.) COMBINATION WRENCH(15/16 IN.) DRILL BITS(17/64 & 21/32 IN.)

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB REPORT NO: X82890-R1 DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: 15 PAGE NO: SCHED ISS: ACT ISS: LATEST CHG: LEAD DP: WORK STA NO:

ASSIST DP: 0123 OUTSIDE MACHINERY MAIN HIGH PRESSURE AIR SYSTEM EQUIPMENT TOOL LISTING DESCRIPTION: AIR FLASK - 8.0 CU. FT. SPECIFICATIONS: DRAWING NO. APPLICABILITY(VLD SERIES) 185368 185118 185366 185016 185363 CAPACITY(CU. FT.) 8.0 8.0 8.0 8.0 WEIGHT(LBS.) 800 720-800 800 800 FDN BOLT SIZE(IN.) 5/8 3/4 1-1/8 7 LIST ID (A) (B) (C) (D) (A) TOOLS REQUIRED FOR INSTALLATION OF A 8.0 CU. FT. AIR FLASK DRAWING VLD185368 INCLUDES: BALL PEIN HAMMER DRILL BITS(21/32 & 15/16 IN.) CENTER PUNCH PORTABLE DRILL MOTOR SCRIBER RATCHET(1/2 & 1 IN. DRIVE) 8' STEEL TAPE EXTENSION(1/2 & 1 IN. DRIVE) 6" STEEL SCALE SOCKET(15/16 & 1-5/16 IN.) FILE COMB. WRENCHES(15/16 & 1-5/16 IN.)* FEELER GAGE C-CLAMP MARKER MOLYCOTE OR C5A COMPOUND UTILITY KNIFE PAINT BRUSH 200' AIR LINE AIR IMPACT WRENCH CUTTING FLUID (B) TOOLS REQUIRED FOR INSTALLATION OF A 8.0 CU. FT. AIR FLASK DRAWING VLD185118 & VLD185363 INCLUDES: ALL ITEMS LISTED IN (A) EXCEPT PAINT BRUSH AND UTIL- > ITY KNIFE. SOCKET, COMB. WRENCH, & DRILL BIT SIZES DIFFER. SOCKET(1-1/8 IN.) COMBINATION WRENCH(1-1/8 & 1-1/16 IN.) (C) TOOLS REQUIRED FOR INSTALLATION OF A 8.0 CU. FT. AIR FLASK ON DRAWING VLD185366 INCLUDES: ALL ITEMS INCLUDED IN (A) EXCEPT PAINT BRUSH AND UTILITY KNIFE. SOCKET, COMBINATION WRENCH, DRILL BIT*

SIZES DIFFER. SOCKET(1-11/16 IN.) DRILL BITS(17/64, 21/32, 25/32, 1-3/16 IN.)

COMBINATION WRENCH(1-11/16 IN.)

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* (D) TOOLS REQUIRED FOR INSTALLATION OF 8.0 CU. FT. AIR FLASK ON DRAWING VLD185016 INCLUDES:

ALL ITEMS INCLUDED IN (A) EXCEPT PAINT BRUSH & UTIL- * ITY KNIFE. SOCKET, COMBINATION WRENCH, & DRILL BIT * SIZES DIFFER. SOCKET(1-1/2 IN.)

COMBINATION WRENCH(1-1/2 IN.)

DRILL BIT(1-1/16, 21/32, 17/64 IN.)

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OUTSIDE MACHINERY
MAIN HIGH PRESSURE AIR SYSTEM EQUIPMENT
TOOL LISTING

DESCRIPTION: 8 IN. IPS BLIND FLANGE

SPECIFICATIONS: BOLT SIZE 3/4 IN.

(A) TOOLS REQUIRED FOR INSTALLATION INCLUDES:

GASKET PUNCH COMBINATION WRENCH(1-1/16 IN.)
UTILITY KNIFE SOCKET(I-1/8 IN.)
MOLYCOTE COMPOUND RATCHET(I/2 IN. DRIVE)

EXTENSION(I/2 IN. DRIVE)

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0125

* OUTSIDE MACHINERY

MAIN HIGH PRESSURE AIR SYSTEM EQUIPMENT

TOOL LISTING

* DESCRIPTION: HOSE REEL

SPECIFICATIONS: TYPE HANNAY MODEL 718-2526

WEIGHT 110 LBS. FDN BOLT SIZE 1/2 IN.

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

BALL PEIN HAMMER DRILL BIT(17/32 IN.)
CENTER PUNCH PORTABLE DRILL MOTOR
SCRIBER RATCHET(I/2 IN. DRIVE)
8' STEEL TAPE EXTENSIONAL(1/2 IN. DRIVE)

6" STEEL SCALE SOCKET(3/4 IN.)

C-CLAMP COMBINATION WRENCH(3/4 IN.)
CUTTING FLUID MOLYCOTE OR C5A COMPOUND

".)

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> 0126 OUTSIDE MACHINERY

MAIN HIGH PRESSURE AIR SYSTEM EQUIPMENT

TOOL LISTING

* DESCRIPTION: RELAY TANK

* SPECIFICATIONS: CAPACITY 2 CU. FT.

WEIGHT 170-387 LBS.

FDN BOLT SIZE 1/2 IN.

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

BALL PEIN HAMMER DRILL BITS(17/32 IN.) CENTER PUNCH PORTABLE DRILL MOTOR SCRIBER RATCHET(1/2 IN. DRIVE) 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE)

6" STEEL SCALE SOCKET(3/4 IN.)

PAINT BRUSH COMBINATION WRENCH(3/4 IN.) C-CLAMP MOLYCOTE OR C5A COMPOUND MARKER

UTILITY KNIFE CUTTING FLUID

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> 0130

GUTSIDE MACHINERY

MAIN OIL LUBRICATION SYSTEM EQUIPMENT

TOOL LISTING

* DESCRIPTION: ELECTRIC WATER HEATER

* SPECIFICATIONS: CAPACITY 5 GALLON

WEIGHT 130 LBS.

FON BOLT SIZE 5/8 IN.

A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BITS(21/32 IN.) * CENTER PUNCH PORTABLE DRILL MOTOR * SCRIBER RATCHET(1/2 IN. DRIVE)

* 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE) * 6" STEEL SCALE SOCKET(15/16 IN.)

* BUCKEYE GRINDER COMBINATION WRENCH(15/16 IN.)

* 200' AIR LINE MOLYCOTE OR C5A COMPOUND

* AIR WHIP CUTTING FLUID

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OUTSIDE MACHINERY

MAIN OIL LUBRICATION SYSTEM EQUIPMENT

TOOL LISTING

DESCRIPTION: LUBE OIL COOLER

* SPECIFICATIONS: DRAWING NO.(VLD) 182014 185737

WEIGHT(LBS) 718 3400 FON BOLT SIZE(IN: 7/8 1-3/8 & 1-1/2

LIST ID (A) (B)

(A) TOOLS REQUIRED FOR INSTALLATION OF A LUBE OIL COOLER * ON DRAWING NO. VLD182014 INCLUDES:

BALL PEIN HAMMER DRILL BIT(15/16 IN.) CENTER PUNCH PORTABLE DRILL MOTOR SCRIBER RATCHET(1 IN. DRIVE) 8'STEEL TAPE EXTENSION(1 IN. DRIVE) 6" STEEL SCALE SOCKET(1-5/16 IN.)

FILE COMBINATION WRENCH(1-5/16 IN.,

FEELER GAGE BUCKEYE GRINDER

200' AIR LINE MOLYCOTE OR C5A COMPOUND

CUTTING FLUID AIR WHIP

(B) TOOLS REQUIRED FOR INSTALLATION OF A LUBE OIL COOLER ON DRAWING NO VLD185737 INCLUDES:

ALL ITEMS LISTED UNDER (A). SOCKET, COMBINATION WRENCH, AND DRILL SIZES DIFFER. SOCKETS(2-1/16 & 2-1/4 IN.) COMBINATION WRENCH(2-1/16 & 2-1/4 IN.) DRILL BIT(1-7/16, 1-9/16 IN.)

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MAIN OIL LUBRICATION SYSTEM EQUIPMENT

TOOL LISTING

* DESCRIPTION: LUBE OIL FILTER

* SPECIFICATIONS: WEIGHT 1800 LBS.(WET)

FDN BOLT SIZE 7/8 IN.

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

R DRILL BITS(15/16 IN.)
PORTABLE DRILL MOTOR
RATCHET(1 IN. DRIVE)
EXTENSION(1 IN. DRIVE)
SOCKET(1-5/16 IN.)

COMBINATION WRENCH(1-5/16 IN.

UTILITY KNIFE

MOLYCOTE OR C5A COMPOUND

.

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON COB DEPT: ENGINEERING DISTR: M

KITTING REPORT TEXT FLY-SHEET SCHED ISS: ACT ISS: LATEST CHG:

0133

LEAD DP: ASSIST DP:

> OUTSIDE MACHINERY MAIN OIL LUBRICATION SYSTEM EQUIPMENT

TOOL LISTING

* DESCRIPTION: LUBE OIL PURIFER

* SPECIFICATIONS: WEIGHT 947 LBS.

FDN BOLT SIZE 3/4 & 5/8 IN.

BILL PAGE NO:

24

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BITS(21/32, 25/32 IN.)

* CENTER PUNCH PORTABLE DRILL MOTOR * SCRIBER RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE)

* 6" STEEL SCALE SOCKET(1-1/8, 15/16 IN.)

* FILE

COMBINATION WRENCH(1-1/16, 15/16 IN.) * FEELER GAGE BUCKEYE GRINDER

* 200' AIR LINE MOLYCOTE OR C5A COMPOUND * PAINT BRUSH TAPS(5/8 IN.-11UNC-2B) * CUTTING FLUID STENCIL(1/4 IN. OR 1/8 IN.)

* AIR WHIP RESILIENT MOUNT PRESERVATIVE(SPRAY-LAC*

PAINT)

REPORT NO: X82890-RI

PAGE NO:

WORK STA NO:

THEALLS CHIRDHILIPING DIVISION

DATE: 04/11/85 DEPT: ENGINEERING SCHED ISS:			KITTING REPORT TEXT FLY-SHEET	BILL PAGE NO: ASSIST DP:	25	REPORT NO: X82890-R1 PAGE NO: 33 WORK STA NO:
	0134	******		************		
		*	OUTSIDE MACHINERY	*		
		×	MAIN OIL LUBRICATION SYSTEM EQUIPMEN	IT *		

TOOL LISTING

LUBE OIL PURIFIER HEATER

FDN BOLT SIZE 5/8 IN.

132 LBS.

WEIGHT

* DESCRIPTION:

* SPECIFICATIONS:

A TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BITS(21/32 IN.) * CENTER PUNCH PORTABLE DRILL MOTOR * SCRIBER RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE) * 6" STEEL SCALE SOCKET(15/16 IN.) * FILE COMBINATION WRENCH(15/16 IN.

* FEELER GAGE MOLYCOTE OR C5A COMPOUND * CUTTING FLUID

INGALLS SHIPBUILDING DIVISION DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON COB **REPORT NO: X82890-R1** DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET **BILL PAGE NO: 26** PAGE NO: LATEST CHG: SCHED ISS: ACT ISS: LEAD DP: ASSIST DP: WORK STA NO: 0135 **OUTSIDE MACHINERY** MAIN OIL LUBRICATION SYSTEM EQUIPMENT TOOL LISTING Description: **LUBE OIL PURIFIER STRAINER** SPECIFICATIONS: WEIGHT 125 LBS. **FDN BOLT SIZE** 1/2 & 7/8 | N . * (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE: * BALL PEIN HAMMER DRILL BITS(17/32, 15/16 IN.) ** CENTER PUNCH PORTABLE DRILL MOTOR * SCRIBER RATCHET(I/2 & Z IN. DRIVE) * 8' STEEL TAPE EXTENSIONAL(I/2 & 1 IN. DRIVE) * 6" STEEL SCALE SOCKET(I-5/16, 3/4 IN.) * MOLYCOTE COMPOUND COMBINATION WRENCH(I-5/16, 3/4 IN.) * CUTING FLUID

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON COB REPORT NO: X82890-RI DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: 27 PAGE NO: 35 SCHED ISS: ACT ISS: LATEST CHG: LEAD DP: ASSIST DP: WORK STA NO:

0136 OUTSIDE MACHINERY MAIN OIL LUBRICATION SYSTEM EQUIPMENT TOOL LISTING *DESCRIPTION: LUBE OIL SERVICE PUMP *SPECIFICATIONS: WEIGHT 2000 LBS. FDN BOLT SIZE 5/8, 3/4, 7/8, 1, 1-1/4 * & 1-1/2 IN. *(A) TOOLS REQUIRED FOR INSTALLATION INCLUDE: *BALL PEIN HAMMER DRILL BITS(15/16,25/32,1/4,17/32,21/32* *PAINT BRUSH ,1-1/16,1-9/16,1-5/16 & 13/16 IN.) *CENTER PUNCH PORTABLE DRILL MOTOR SCRIBER RATCHET(1/2 & 1 IN. DRIVE 8' STEEL TAPE EXTENSION(1/2 & 1 IN. DRIVE) *6" STEEL SCALE SOCKET(1-5/16,1-1/2,1-1/8,1-7/8,15/16,* *UTILITY KNIFE & 2-1/4 IN.) *FILE COMBINATION WRENCH (SAME AS GORNOT FRZE * *FEELER GAGE S ABOVE. ALSO (1-1/16 IN.) *200' AIR LINE MOLYCOTE OR C5A COMPOUND *HOLE SAW(4-1/4 IN. TAPS(3/4 IN.-10UNC-3B, *DIAMETER) 5/8 IN.-11UNC-3B) *CUTTING FLUID TAPING FLUID *BUCKEYE GRINDER STENCIL(1/4 IN. OR 1/8 IN.) AIR WHIP RESILIENT MOUNT PRESERVATIVE(SPRAY-LAC* PAINT)

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB DEPT: ENGINEERING DISTR: H

SCHED ISS:

ACT ISS:

LATEST CHG:

KITTING REPORT TEXT FLY-SHEET

LEAD DP:

BILL PAGE NO: ASSIST DP:

REPORT NO: X82890-R1 PAGE NO:

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WORK STA NO:

36

0137

OUTSIDE MACHINERY MAIN OIL LUBRICATION SYSTEM EQUIPMENT

TOOL LISTING

* DESCRIPTION:

LUBE OIL STORAGE AND

CONDITIONING ASSEMBLY

* SPECIFICATIONS:

WEIGHT

1650 LBS.

FON BOLT SIZE 3/4 IN.

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER

* CENTER PUNCH

* SCRIBER

* 8' STEEL TAPE

* 6" STEEL SCALE

* FILE

* FEELER GAGE AIR IMPACT WRENCH

* 200' AIR LINE MOLYCOTE OR C5A COMPOUND

* PAINT BRUSH MOLYEDENIUM DISULFIDE GREASE

* MARKER UTILITY KNIFE

* C-CLAMP TAPS

* TEMPLATE MATERIAL PRE-MANUFACTURED TEMPLATE

* HOLE SAW GASKET PUNCH * CUTTING FLUID TAPING FLUID

* BUCKEYE GRINDER STENCIL(1/4 IN. OR 1/8 IN.)

* AIR WHIP RESILIENT MOUNT PRESERVATIVE(SPRAY-LAC*

PAINT)

INGALLS SHIPBUILDING DIVISION
BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB

DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: SCHED ISS: ACT ISS: LATEST CHG: LEAD DP: ASSIST DP: 9200 OUTSIDE MACHINERY AIR CONDITIONING SYSTEM EQUIPMENT TOOL LISTING *DESCRIPTION: A/C PLANT *SPECIFICATIONS: CAPACITY 200 TON WEIGHT 22,000 LBS A) TOOLS REQUIRED FOR INSTALLATION INCLUDE: * BALL PEIN HAMMER DRILL BITS(7/8,1/4, & 9/16 IN.) * WEDGES PORTABLE DRILL MOTOR * CUTTING FLUID RATCHET(1 IN. DRIVE) * 8 LB SLEDGE HAMMER EXTENSION(1 IN DRIVE) * OPEN END WRENCH(SOCKET(2-1/4 IN.) * 2-1/4 IN.) COMBINATION WRENCH(1-5/16 IN.) SPOT FACER(1-1/8 IN. DIAMETER)

DATE: 04/11/85

4

REPORT NO: X82890-R1

37

PAGE NO:

WORK STA NO:

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DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON COB DEPT: ENGINEERING DISTR: M

KITTING REPORT TEXT FLY-SHEET SCHED ISS: ACT ISS: LATEST CHG:

BILL PAGE NO

REPORT NO: X82890-R1 PAGE NO: 38

LEAD DP:

ASSIST DP:

WORK STA NO:

30

9201

OUTSIDE MACHINERY

ELECTRICAL POWER DISTRIBUTION SYSTEM EQUIPMENT

TOOL LISTING

* DESCRIPTION:

ELECTRICAL ENCLOSURE

* SPECIFICATIONS:

FOR CG-47 CLASS CRUISER

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER * FORTABLE DRILL MOTOR * RATCHET(1/2 IN. DRIVE)

CENTER PUNCH STEEL WEDGE PRY BAR

* EXTENSION(1/2 IN. DRIVE) * TAPS(3/4 & 5/8 IN)

CUTTING FLUID PHILLIPS SCREW DRIVER

* TRANSFER PUNCH(3/4 IN.)

* SOCKET(3/4, 15/16 & 1-1/8 IN.)

* DRILL BITS(1/4, 25/32, 17/32, 2 21/32 IN.)

COMBINATION WRENCH(15/16, 3/4, & 1-1/8 IN.)

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB DEPT: ENGINEERING

LATEST CHG:

SCHED ISS:

DISTR: M

ACT ISS:

KITTING REPORT TEXT FLY-SHEET

LEAD DP:

BILL PAGE NO: ASSIST DP:

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REFORT NO: X82890-R1 PAGE NO: 39 WORK STA NO:

9202

OUTSIDE MACHINERY

AUXILARY GENERATOR SYSTEM EQUIPMENT

TOOL LISTING

*DESCRIPTION:

SHIP'S SERVICE EMERGENCY GENERATOR

*SPECIFICATIONS:

FOR CG-47 CLASS CRUISER

* (A)TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* SLEDGE HAMMER INDUSTRIAL COATING PAINT * 6" STEEL SCALE MOLYCOTE OR C5A COMPOUND

* DOG LEG PAINT BRUSH 200' AIR LINE

* REG. PAINT BRUSH

* AIR IMPACT WRENCH(1 IN, DRIVE)

* SOCKET (1-1/2, 1-1/4, 1-5/16, & 1-7/16 IN.) * 1 IN. DIA. ROUND BAR (3 PCS., EACH 3 FT. LONG

* 7/8 IN DIA. TAPERED ALIGN. PINS (QTY 6, EACH 6 IN. LONG) *

* COMBINATION MRENCH(1-1/2, 1-1/4, 1-5/16, & 1-7/16 IN.)

DATE: 04/11/85 BILL: 0000 -000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB' DEPT: ENGINEERING DISTR: H ACT ISS: LATEST CHG: REPORT TEXT FLY-SHEET

KITTING REPORT TEXT FLY-SHEET

TEXT FLY-sHEET BILL PAGE NO: 32 LEAD DP: ASSIST DP:

9203

OUTSIDE MACHINERY TOOL LISTING

* DESCRIPTION: FIVE INCH GUN MOUN MACHINING

* SPECIFICATIONS: FOR CG-47 CLASS CRUISER

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER FEELER GAGE

* FILE

* CENTER PUNCH

* SOCKET(1 IN.)

* 8' STEEL TAPE

* 6" STEEL SCALE

* DITE

* COMPRIMATION WRENCH(1 IN.) * CUTTING FLUID

COMBINATION WRENCH(1 IN.)
CARBIDE CUTTING TOOL
PORTABLE MILLING MACHINE

BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON COB DATE: 04/11/85 REPORT NO: X82890-R1 DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: 33 PAGE NO: 41 SCHED ISS: ACT ISS: LATEST CHG: LEAD DP: ASSIST DP: WORK STA NO:

9204 *********************************

OUTSIDE MACHINERY TOOL LISTING

* DESCRIPTION: STERN TUBE AND STRUT BORING

* SPECIFICATIONS: FOR CG-47 CLASS CRUISER

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER ALLEN WRENCH SET(1/16 TO 3/8 IN.)
* ID MICROMETER CHIP PULLER RAKE
* FILE RATCHET(1/2 IN. DRIVE)

* FILE RATCHET(1/2 IN. DRIVE)

* FLAT SCREW DRIVER EXTENSION(1/2 IN. DRIVE)

* 6" STEEL SCALE SOCKET(7/16 TO 1-1/4 IN.)

* FILE FIXED END WRENCH SET(3/8 TO 1-1/4 IN.)*

* FEELER GAGE CARBIDE CUTTING TOOLS *

* CUTTING FLUID PORTABLE SURFACE GRINDER *

* 200° AIR LINE AIR WHIP

PORTABLE BORING BAR

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB DEPT: ENGINEERING

DISTR: M KITTING REPORT TEXT FLY-SHEET

REPORT NO: X82890-RI BILL PAGE NO: 34 SCHED ISS: ACT ISS: LATEST CHG: PAGE NO: LEAD DP: ASSIST DP: WORK STA NO:

9205

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OUTSIDE MACHINERY TOOL LISTING

* DESCRIPTION: MAIN ENGINE PADS MACHINING

* SPECIFICATIONS: FOR CG-47 CLASS CRUISER

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER CHALKLINE * CENTER PUNCH

CARBIDE SINGLE POINT CUTTING TOOLS * * HYDRAULIC JACK RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE) * 6" STEEL SCALE SOCKET(3/4 IN. DRIVE) * FILE ALLEN WRENCH(1/4 IN.) * TAPER LEVEL 10' STRAIGHT EDGE

* CUTTING FLUID PORTABLE MILLING MACHINE

INGALLS SHIPBUILDING DIVISION DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB REPORT NO: X82890. 29 DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: **33** PAGE NO: DEPT: ENGINEERING WORK STA NO: ACT ISS: LATEST CHG: LEAD DP: ASSIST DP: SCHED ISS: 9206 OUTSIDE MACHINERY TOOL LISTING * DESCRIPTION: WASTE HEAT BOILER FOR CG-47 CLASS CRUISER * SPECIFICATIONS: * (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE: * BALL PEIN HAMMER DRILL BITS(17/64, 25/32, 1-5/16 IN.) * CENTER PUNCH FORTABLE DRILL MOTOR 2 FIXED END WRENCHES(1-7/8 IN.) * SCRIBER

SPOT FACING TOOL

MOLYCOTE OR C5A COMPOUND

HYDRAULIC JACK

* 8' STEEL TAPE

* FILE

* 6" STEEL SCALE

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DATE: 04/11/85
DEPT: ENGINEERING DISTR: M LATEST CHG:

NO DESCRIPTION FOUND ON COB
KITTING REPORT TEXT FLY-SHEET ASSIST DP: PAGE No: 36 9207 TOOL LISTING **DESCRIPTION:** CHILL WATER PUMP * SPECIFICATIONS: FOR CG-47 CLASS CRUISER (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE: STENCIL(1/4 OR 1/8 IN.)

EXTENSIONAL(1/2 IN. DRIVE)

RATCHET(1/2 IN. DRIVE)

*
SOCKET(13/16 & 1-1/8 IN.)

COMBINATION WRENCH(13/Z6 & 1-1/8 IN.) I

RESILIENT MOUNT PRESERVATIVE(SPRAY-LAC*
PAINT)

*

BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB DATE: 04/11/85

LATEST CHG:

DEPT: ENGINEERING SCHED ISS:

ACT ISS:

DISTR: M KITTING REPORT TEXT FLY-SHEET

LEAD DP:

BILL PAGE NO: ASSIST DP:

PAGE NO: HORK STA NO:

REPORT NO: X82890-R1

45

9208

> OUTSIDE MACHINERY TOOL LISTING

* DESCRIPTION:

BOAT HANDLING WINCH

* SPECIFICATIONS:

FOR CG-47 CLASS CRUISER

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE

* BALL PEIN HAMMER * CENTER PUNCH

REAMERS(VARIOUS SIZES 3/4 TO 2 IN.)

* SCRIBER

FORTABLE DRILL MOTOR RATCHET(1/2 IN. DRIVE) EXTENSION(1/2 IN. DRIVE)

* 8' STEEL TAPE * 6" STEEL SCALE

SOCKET(1-1/4 IN.)

* FILE * FEELER GAGE

COMBINATION WRENCH(1-1/4 IN ... DRILL BITS(17/32 & 25/32 IN.

* 200' AIR LINE

MOLYCOTE OR C5A COMPOUND

* AIR REAMER

AIR WHIP

* CUTTING FLUID

BUCKEYE GRINDER

* C-CLAMP

LEVEL

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB

DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET

REPORT NO: X82890-RI BILL PAGE NO: 38 SCHED ISS: PAGE NO: ACT ISS: LATEST CHG: LEAD DP: ASSIST DP: WORK STA NO:

46

9209

OUTSIDE MACHINERY TOOL LISTING

* DESCRIPTION: SEWAGE PUMP

* SPECIFICATIONS: FOR CG CLASS CRUISER

* A TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BITS(1/4,17/32,21/32 & 25/32 IN)* * CENTER PUNCH PORTABLE DRILL MOTOR * SCRIBER RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE) * 6" STEEL SCALE SOCKET(13/16 & 1-1/8 IN.)

* FILE COMBINATION WRENCH(13/16 & 1-1/8 IN.) *

* FEELER GAGE STENCIL(1/4 OR 1/8 IN.) * MOLYCOTE COMPOUND RESILIENT MOUNT PRESERVATIVE(SPRAY-LAC* * CUTTING FLUID PAINT)

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB

DEPT: ENGINEERING DISTR: M

SCHED ISS:

ACT ISS: LATEST CHG: KITTING REPORT TEXT FLY-SHEET LEAD DP:

BILL PAGE NO: ASSIST DP:

PAGE NO:

39

WORK STA NO:

REPORT NO: X82890-R1

47

9210 OUTSIDE MACHINERY

TOOL LISTING

* DESCRIPTION: BRIDGE CRANE AND RAILS

* SPECIFICATIONS: FOR CG-47 CLASS CRUISER

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BITS(1/8,17/64,21/32 & 25/32 IN)*

* CENTER PUNCH PORTABLE DRILL MOTOR * SCRIBER RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE)

* 6" STEEL SCALE SOCKET(7/16, 3/4 & 15/16 IN.) ALLEN WRENCH(3/8, 5/16 IN.) * CHALKLINE

* MOLYCOTE COMPOUND COMBINATION WRENCH(7/16,3/4 & 15/16)

* CUTTING FLUID

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB DEPT: ENGINEERING DISTR: M

REPORT NO: X82890-RI KITTING REPORT TEXT FLY-SHEET SCHED ISS: BILL PAGE NO: ACT ISS: 40 LATEST CHG: PAGE NO: 48 LEAD DP: ASSIST DP: WORK STA NO:

9211

OUTSIDE MACHINERY TOOL LISTING

* DESCRIPTION: CONVECTION OVEN

* SPECIFICATIONS: GALLEY EQUIPT. FOR CG-47 CLASS CRUISER*

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BITS(1/8 & 9/16 IN.) * CENTER PUNCH PORTABLE DRILL MOTOR * SCRIBER RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE) * 6" STEEL SCALE SOCKET(3/4 IN.) * MOLYCOTE COMFOUND COMBINATION WRENCH(3/4 IN.) * CUTTING FLUID TAPS(FOR 1/2-13 UNC 2A)

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB REPORT NO: X82890-RI DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: 41 PAGE NO: SCHED ISS: ACT ISS: LATEST CHG: LEAD DP: ASSIST DP:

9212

OUTSIDE MACHINERY TOOL LISTING

* DESCRIPTION: HOIST AND MONORAIL

* SPECIFICATIONS: HELICOPTER HANGAR REPAIR FOR

CG-47 CLASS CRUISER

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BITS(1/8 & 17/32 IN.) * CENTER PUNCH FORTABLE DRILL MOTOR * SCRIBER RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE) * 6" STEEL SCALE SOCKET(3/4 IN.)

* CHALKLINE COMBINATION WRENCH(3/4 IN.) * CUTTING FLUID ALLEN WRENCH(5/16 IN.) MOLYCOTE OR CSA COMPOUND

49

WORK STA NO:

INGALLS SHIPBUILDING DIVISION
BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON COB

DATE: 04/11/85 DEPT: ENGINEERING SCHED ISS:

DISTR: M

ACT ISS:

KITTING REPORT TEXT FLY-SHEET LATEST CHG:

LEAD DP:

BILL PAGE NO: 42 ASSIST DP:

REPORT NO: X82890-R1 PAGE NO: 50 WORK STA NO:

9213

OUTSIDE MACHINERY TOOL LISTING

* DESCRIPTION: BORING RUDDER CASTINGS

* SPECIFICATIONS: FOR CG-47 CLASS CRUISER

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER 1-1/2" REX-95 TOOL STEEL * CENTER PUNCH PORTABLE BORING BAR * 8 LB MALL RATCHET(1/2 IN. DRIVE) * 12' STEEL TAPE EXTENSION(1/2 IN. DRIVE) * 6" STEEL SCALE SOCKET(9/16 TO 15/16 IN.) * 16" CRESENT WRENCH 10" CRESENT WRENCH * PLUMB BOB ID MICROMETER 4"-40"

* CUTTING FLUID **VERNIER CALIPERS**

ALLEN WRENCH SET(UP TO 3/8")

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB DEPT: ENGINEERING DISTR M REPORT NO: X82890-RI KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: 43 SCHED ISS: ACT ISS: PAGE NO: LATEST CHG: . LEAD DP: ASSIST DP: WORK STA NO:

> 9214

OUTSIDE MACHINERY TOOL LISTING

* DESCRIPTION: CAPSTAN

* SPECIFICATIONS: FOR CG-47 CLASS CRUISER

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BIT(13/16" ,1/4" & 13/16" T.S. * CENTER PUNCH NO. 3 TAPER) * SCRIBER RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE) * 6" STEEL SCALE SOCKET(1-1/8, 1-1/4 & 1-5/16 IN.) * LAYOUT FLUID CRESENT WRENCHES(10 & 16 IN.) * ID VERNIER CALIPER PORTABLE DRILL MOTOR * 6" DIA. FACING BAR ALLEN WRENCHES(1/4 & 3/16 IN.) * MOLYCOTE COMPOUND OD MICROMETER(0 - 1 IN.) * 7/8" SHELL REAMER OD MICROMETER(0 - 2 IN.) * CUTTING FLUID 1-1/4" SHELL REAMER NO. 3 TAPER

1-1/4" EXPANSION REAMER

DATE: 04/11/85 BILL: 0000- DEPT: ENGINEERING DISTR: M SCHED ISS: ACT ISS:	000-0 HULL: 4500 DESC: N KITTING RE	SHIPBUILDING DIVISION NO DESCRIPTION FOUND ON COB EPORT TEXT FLY-SHEET BILL PAC LEAD DP: ASSIST DP:	SE NO: 44	REFORT NO: X82890-R1 PAGE NO: 52 WORK STA NO:
9215	* * Description: * SPECIFICATIONS: *		* * * * * * * * * * * *	
	* (A) TOOLS REQUIRE * BALL PEIN HAMMER * CENTER PUNCH * SCRIBER * 12' STEEL TAPE * 6" STEEL SCALE * VISE GRIPS * PIN PUNCH * 200' AIR LINE * BUCKEYE GRINDER * CUTTING FLUID * * * * * * * * * * * * *	FORTABLE ORILL MOTOR RATCHET(1/2 IN. DRIVE)	* * * * * * * * * * * * * * * * * * *	
	* * * * * * *		* * * * * *	

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DATE: 04/11/85	BILL: 0000-	-000-0 HULL: 45	00 DESC: NO DESCRIPTION FOUND ON CDB			REPORT NO: 1	X82890-R1
DEPT: ENGINEERING	DISTR: M		KITTING REPORT TEXT FLY-SHEET	BILL PAGE NO:	45	PAGE NO:	53
SCHED ISS:	ACT ISS:	LATEST CHG:	LEAD DP:	ASSIST DP:		WORK STA NO	:

9216 OUTSIDE MACHINERY MAIN PROPELLERS AUXILARY EQUIPMENT TOOL LISTING * DESCRIPTION: HYDRAULIC OIL POWER MODULE * SPECIFICATIONS: FOR CG-47 CLASS CRUISER * (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE: * BALL PEIN HAMMER DRILL BITS(1/4, 3/4, 1-5/16 IN.) * CENTER PUNCH PORTABLE DRILL MOTOR * SCRIBER 2 - BOXED END WRENCHES(1-7/8 IN.) * 8' STEEL TAPE 2 - BOXED END WRENCHES(2 IN.) * 6" STEEL SCALE MOLYCOTE OR C5A COMPOUND * CUTTING FLUID

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB
DEPT: ENGINEERING DISTR: H
SCHED ISS: ACT ISS: LATEST CHG: KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: 46
WORK STA NO:

> OUTSIDE MACHINERY MAIN AND AUXILARY FEED CONDENSATE SYSTEM EQUIPMENT

TOOL LISTING

DESCRIPTION: FEED PUMP

SPECIFICATIONS: FOR CG-47 CLASS CRUISER

(A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER

* CENTER PUNCH

* SCRIBER

* 8' STEEL TAPE

* 6" STEEL SCALE

* BUCKEYE GRINDER

* AIR WHIP

* BALL PEIN HAMMER

PORTABLE DRILL MOTOR

RATCHET(1/2 & 1 IN. DRIVE)

EXTENSIONAL(1/2 IN. DRIVE)

SOCKET(1-1/16, 1-1/8 & 1-5/16 IN.)

200' AIR LINE MOLYCOTE OR C5A COMPOUND CUTTING FLUID

*H#W*WMHWW%*WNWWHMtiWWWWWti#HH#*"MHHN*WMHW**#%H#*%*%H#W**NWM#H#N

BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB DATE: 04/11/85 REPORT NO: X82890-R1 DEPT: ENGINEERING DISTR M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: 47 PAGE NO: 55 SCHED ISS: ACT ISS: LATEST CHG: LEAD DP: ASSIST DP: WORK STA NO:

> 9218 *************************** OUTSIDE MACHINERY

FRESH WATER AND SPECIAL COOLING SYSTEMS EQUIPMENT

TOOL LISTING

* DESCRIPTION: AEGIS WATER COOLER

* SPECIFICATIONS: FOR CG-47 CLASS CRUISER

(A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BITS(1/4 & 1-5/16 IN. * CENTER PUNCH

PORTABLE DRILL MOTOR * SCRIBER 12" CRESENT WRENCH

* 8' STEEL TAPE TORQUE WRENCH

* 6" STEEL SCALE SOCKET(1-5/16" a 3/4" DRIVE FOR TORQUE*

* CUTTING FLUID HRENCH)

* MOLYCOTE COMPOUND CCMBINATION WRENCH(1-5/16, 1-13/16 &

1-7/8 IN.)

DATE: 04/11/85 BILL: 0000-000-0 HULL: 4500 DESC: NO DESCRIPTION FOUND ON CDB

REFORT NO: X82890-R1 DEPT: ENGINEERING DISTR: M KITTING REPORT TEXT FLY-SHEET BILL PAGE NO: 48 PAGE NO: 56 SCHED ISS: ACT ISS: LATEST CHG: LEAD DP: ASSIST DP: WORK STA NO:

> 9219

OUTSIDE MACHINERY

ELECTRICAL POWER DISTRIBUTION SYSTEM EQUIPMENT

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TOOL LISTING

* DESCRIPTION: ISOLATORS FOR 400 HTZ. CONVERTER EQUIPT.*

* SPECIFICATIONS: FOR CG-47 CLASS CRUISER

* (A) TOOLS REQUIRED FOR INSTALLATION INCLUDE:

* BALL PEIN HAMMER DRILL BITS(1/4 & 15/16 IN.) * CENTER PUNCH PORTABLE DRILL MOTOR

* SCRIBER RATCHET(1/2 IN. DRIVE) * 8' STEEL TAPE EXTENSION(1/2 IN. DRIVE)

* 6" STEEL SCALE SOCKET(15/16 IN.)

* DIVIDERS COMBINATION WRENCH(15/16 IN.)

* LAYOUT FLUID CUTTING FLUID

MOLYCOTE OR C5A COMPOUND